United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number SA1938WE

This certificate, issued to Madras Air Service

certifies that the change in the type design for the following product with the limitations and conditions thereof as specified hereon meets the airworthiness requirements of Part 3 *of the* Civil Air *Regulations.* (See T. C. Data Sheet 3A13)

Original Product—Type Certificate Number: 3A13

Make: Cessna

Model: 182 Series

Description of Type Design Change:

Installation of Madras Air Service Super Tips in accordance with Drawing No. 102, Sheet 1 dated July 13, 1982; and Sheet 2, Revision B dated July 11, 1982.

Limitations and Conditions: This approval should not be extended to other specific airplanes of these models on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect upon the airworthiness of that airplane. Supplemental Type Certificate Addendum No. SA1938WE limits the airspeeds and is required to be included in the aircraft permanent records when the aircraft is modified in accordance with this Supplemental Type Certificate.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: February 4, 1969

Date of issuance: June 11, 1969

Date reissued:

Date amended: August 4, 1972; November 25, 1975; May 3, 1983, March 29, 1985

By direction of the Administrator

(Signature)

Manager, Seattle Aircraft Certification Office

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA Form 8110-2 (10-68)

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Supplemental Type Certificate

(Continuation Sheet)

March 29, 1985 *Number* SA1938WE

SUPPLEMENTAL TYPE CERTIFICATE ADDENDUM NO. SA1938WE

The conditions and limitations of Type Certificate Data Sheet No. 3A13 apply except as follows:

This STC Addendum, which is a part of Supplemental Type Certificate No. SA1938WE, prescribes conditions and limitations under which the product for which the STC was issued meets the airworthiness requirements of the Civil Air Regulations. A copy of this STC Addendum is required to be maintained as a part of the modified aircraft's permanent records.

Supplemental Type Certificate Holder: Madras Air Service

I, II, III, IV: Models 182, 182A, 182B, 182C, 182D

Airspeed Limits*	
Maneuvering	116 MPH (101K)
Maximum Structural Cruising	152 MPH (132K)
Never Exceed	175 MPH (152K)

V, VI, VII: Models 182E, 182F, 182G, 182H, 182J, 182K, 182L, 182M

Airspeed Limits*	
Maneuvering	122 MPH (106K)
Maximum Structural Cruising	152 MPH (132K)
Never Exceed	182 MPH (159K)

VIII: Models 182N

Airspeed Limits*	
Maneuvering	124 MPH (108K)
Maximum Structural Cruising	152 MPH (132K)
Never Exceed	188 MPH (163K)

IX: Models 182P

Airspeed Limits*	
Maneuvering	121 MPH (105K)
Maximum Structural Cruising	152 MPH (132K)
Never Exceed	188 MPH (163K)

X: Models 182Q

Airspeed Limits*	
Maneuvering	122 MPH (106K)
Maximum Structural Cruising	156 MPH (135K)
Never Exceed	196 MPH (170K)

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(Continuation Sheet)

March 29, 1985 *Number* SA1938WE

SUPPLEMENTAL TYPE CERTIFICATE ADDENDUM NO. SA1938WE

XI:

Models R182, TR182				
Airspeed Limits*	1978-R182	1979-R182	1980/on R182	TR182
Maneuvering	106K	106K	106K	106K
Maximum Structural Cruising	135K	152K	151K	149K
Never Exceed	173K	173K	171K	169K

XII:

Models 182R, T182		
Airspeed Limits*	182R	T182
Maneuvering	105K	105K
Maximum Structural Cruising	135K	133K
Never Exceed	170K	169K

*These Airspeed Limitations may be used in lieu of gross weight reductions imposed by the original STC and Addendum dated June 11, 1969.

NOTE 1: Conformity to Madras Air Service, Drawing No. 102, Sheet 1, dated July 13, 1972 and Sheet 2, Revision B, dated July 11, 1972, must be established prior to release of the modified aircraft to Normal Category operations.

NOTE 2: The aircraft Weight and Balance Report must be revised as follows at the time of modification.

Weight of "Super Tips" 9.5 lbs. total; deduct weight of the tips being removed and add the difference to the aircraft empty weight. The moment change is negligible.

NOTE 3: The placards required by Type Certificate Data Sheet 3A13, Note 2D for the Model 182N must be revised to relect the following airspeed changes:

Maneuvering Speed 124 MPH/CAS

NOTE 4: The placards required by Type Certificate Data Sheet 3A13, Note 2E for the model 182P must be revised to reflect the following airspeed changes:

Maneuvering Speed 121 MPH/CAS.

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SUPPLEMENTAL TYPE CERTIFICATE ADDENDUM NO. SA1938WE

NOTE 5: The placards required by Type Certificate Data Sheet 3A13, Note 2F for the Model 182Q must be revised to reflect the following airspeed changes.

Maneuvering Speed 122 MPH/CAS.

NOTE 6: The placards required by Type Certificate Data Sheet 3A13, Note 2G for the models R182 and TR182 must be revised to reflect the following airspeed changes:

MAX SPEED - KIAS	
Maneuver	106
Gear Oper	133
Gear Down	133

NOTE 7: The placards required by Type Certificate Data Sheet 3A13, Note 2H for the models R182 and T182, S/N's 18267302 and 18267716 and on, must be revised to reflect the following airspeed changes:

Maneuvering Speed 105 KIAS.

- END -

U.S. Department
of Transportation

**Federal Aviation
Administration**

Northwest Mountain Region
Colorado, Idaho, Montana,
Oregon, Utah, Washington,
Wyoming

17900 Pacific Highway South
C-68966
Seattle, Washington 98168

APR 3 1985

Madras Air Service
1914 N. W. Demers Drive
Madras, Oregon 97741

Gentlemen:

We have completed our evaluation of your Supplemental Type Certificate (STC) project and find that you have satisfactorily demonstrated compliance with the applicable certification regulations. Accordingly, we have enclosed amended STC No. SA1938WE, dated March 29, 1985, which indicates our approval of extending the installation of Madras Air Service Super Tips to Cessna models R182, TR182, 182R and T182.

This STC is official Federal Aviation Administration (FAA) approval of your installation and may be used to authorize identical installations on other aircraft of the same model, subject to the limitations noted on the certificate. It may be transferred or otherwise made available to another party by means of a licensee arrangement in accordance with Federal Aviation Regulations (FAR) 21.47. You are requested to advise this office within 30 days after the transfer when you transfer or grant licensee rights to the STC in order that we may take the necessary recording or reissuance action.

As recipient of this approval, except as provided in FAR 21.3(d), you are required to report any failure, malfunction, or defect in any product or part manufactured by you that you have determined has resulted or could result in any of the occurrences listed in FAR 21.3(c). The report should be communicated initially by telephone to the Manager, Aircraft Modification Branch, telephone number 206-431-2845, within 24 hours after it has been determined that the failure has occurred. In addition, written notification tothe Manager, Aircraft Modification Branch, ANM-190S, at the above address is required. FAA Form 8330-2 (Malfunction or Defect Report) or any other appropriate format is acceptable in transmitting the required details.

If you plan to manufacture replacement or modification parts for sale in conformance with approved data listed on the Certificate, you are required to comply with FAR 21.303. A Parts Manufacturer Approval (PMA) may be issued under the provisions of FAR 21.303(d) when you submit a statement certifying that you have established a fabrication inspection system as required by FAR 21.303(h). The identification requirements for parts produced under a PMA are in FAR 45.15. Your statement may be in letter form, with a reference to the STC number, and should be addressed to: Federal Aviation Administration,

Northwest Mountain Region, 17900 Pacific Highway South, C-68966, Seattle, Washington 98168, Attention: Manager, Manufacturing Inspection Branch, ANM-180S.

Sincerely,

H. E. Waterman
Manager, Seattle Aircraft
Certification Office

Enclosure

"The Home of Super Tips"

Ace Demers — President

Madras air service

1914 N.W. DEMERS DRIVE
MADRAS, OREGON 97741
PHONE (503) 475-2360

Phone: (503) 475-2360
Phone: 1-800-423-5892
(For Orders Only)
Fax: (503) 475-2365

860-2856

REVISED 5/11/92

MADRAS AIR SERVICE
FIBERGLASS "SUPER TIPS"
INSTALLATION INSTRUCTIONS
MODEL 102
AIRCRAFT: CESSNA 150, 152, 170A&B 172, 175, 180, 182, 185, 188
205,206, 210 SERIES.

1. REMOVE ORIGINAL WING TIP.
2. INSTALL GRIMES MODEL "E" NAVIGATION LIGHT ASSEMBLY, PART #A-1285 IN SUPER TIP.
3. PROVIDE #16 GROUND WIRE TO LIGHT ASSEMBLY IF NOT PREVIOUSLY INSTALLED.
4. MARK END OF WING SO NEW TIP WILL OVERLAY BY 3/4".
5. INSTALL NEW TIP ON WING UP TO 3/4" MARK.
6. USING HOLE FINDER, LOCATE AND DRILL 5/32" HOLES TO MATCH EXISTING MOUNTING NUT PLATES. (A SIMPLE HOLE FINDER CAN BE MADE FROM 2 OLD HACK SAW BLADES.)
7. HOLD TIP TIGHT AGAINST LEADING EDGE WHILE DRILLING HOLES.
8. REMOVE TIP & CLEAN DRILL CHIPS.
9. HOOK UP HOT WIRE TO LIGHT ASSEMBLY.
10. FASTEN GROUND WIRE TO STRUCTURE.
11. PUT TIP ON WING WITH ORIGINAL SCREWS REMOVED FROM OLD TIP.**
12. TIGHTEN SCREWS FRONT TO REAR.
13. RECORD THIS MODIFICATION IN AIRCRAFT LOG & FILL OUT FAA FORM 337.
14. SUGGESTED STATEMENT FOR LOG ENTRY & FORM 337: "INSTALLED FIBERGLASS "SUPER TIPS" IN ACCORDANCE WITH STC #_____.
15. WEIGHT & BALANCE INFORMATION: WEIGHT OF "SUPER TIPS" 4.75 LBS EACH 9.5 LBS TOTAL: DEDUCT ACTUAL WEIGHT OF TIPS REMOVED FROM 9.5 LBS AND DIFFERENCE TO EMPTY WEIGHT. MOMENT CHANCE NEGILIGABLE.

**NOTE: INSTALL THIN FLAT WASHERS UNDER SCREW HEADS & CHECK OCCASIONALLY FOR TIGHTNESS.

NOTE: BE SURE UNDERNEATH THE WING IS LEVEL WITH THE FLAT PART OF THE SUPER TIP BEFORE IT CURVES DOWN.